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| Notice of Allowability | Application No. | Applicant(s) |
| | 09/878,296 | MATSUGU, MASAKAZU |
| | Examiner Joseph P. Hirl | Art Unit 2129 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to June 27, 2005.
2. The allowed claim(s) is/are 1-66.
3. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All
 - b) Some*
 - c) None
 of the:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) hereto or 2) to Paper No./Mail Date _____.
 - (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. Notice of References Cited (PTO-892)
2. Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. Notice of Informal Patent Application (PTO-152)
6. Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. Examiner's Amendment/Comment
8. Examiner's Statement of Reasons for Allowance
9. Other _____.

Reasons for Allowance

1. Claims 1-66 are allowed.

2. The following is an examiner's statement of reasons for allowance:

The cited prior art taken alone or in combination fails to teach the claims invention of pattern detection using signal processing elements (synonymous with neurons of a neural network (Specification @ page 1, lines 9-12)) trained to predetermined features for pattern classification and to which input patterns are subjected temporally coded in a time series pulse train that propagates from layer to layer of the signal processing elements in a predetermined order to include respective intervals on a single line (bus) over a predetermined time range.

The closest prior art (Fukushima, U.S. Patent 5,058,184) teaches a hierarchical information processing system in which a plurality of parallel afferent signal paths extend upwards from lower order stages on a pattern input side to higher order stages on the recognition output side and a plurality of parallel efferent signal paths extend downward from higher order stages to lower order stages and wherein the afferent and efferent signals are paired and related respectively to excitatory and inhibitory effects. Fukushima does not teach processing based on a pattern coded in a time series pulse train propagating through the neural network on a single line over a predetermined time range. Eckmiller (Information Processing in Biology-Inspired Pulse Coded Neural Networks) teaches an asynchronous pulse train processing conditioned on threshold values. Johnson (U.S. Patent 5,664,065) teaches a pulse coupled automatic object recognition system dedication clause to generate pulse patterns from optical images of

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cluttered input scenes. Iwata (U.S. Patent 6,088,490) teaches an apparatus for processing two-dimensional information wherein a signal processing circuit generates a pulse width modulation signal which has a pulse width corresponding to the information detected with a plurality of bus lines available to be selected for reading at least one pulse width modulation signal. Eckmiller, Johnson and Iwata do not teach nor is there an obvious combination of such references with Fukushima concerning a pulse signal with an output value corresponding to an arrival time pattern of a plurality of pulse signals input in a predetermined order and respective intervals through a single line from a plurality of signal processing elements within a predetermined time range for the purpose of pattern detection.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Correspondence Information

4. Any inquiry concerning this information or related to the subject disclosure should be directed to the Primary Examiner, Joseph P. Hirl, whose telephone number is (571) 272-3685. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, David R. Vincent can be reached at (571) 272-3080.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,
Washington, D. C. 20231;

Hand delivered to:

Receptionist,
Customer Service Window,
Randolph Building,
401 Dulany Street,
Alexandria, Virginia 22313,
(located on the first floor of the south side of the Randolph Building);

or faxed to:

(571) 273-8300 (for formal communications intended for entry).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).



Joseph P. Hirsh

Primary Examiner
January 31, 2006